CHAPTER 1 - INVENTORY

LAKE HAVASU CITY MUNICIPAL AIRPORT

LIMITED MASTER PLAN UPDATE

Prepared for:
City of Lake Havasu City

Prepared by:
Stantec Consulting Inc.

1.1 INTRODUCTION

The Inventory Chapter presents information on Lake Havasu City (LHC) Municipal Airport and the surrounding community collected for the Limited Master Plan Update. This chapter incorporates information contained in the 1994 Airport Master Plan and updates that information with regard to changes and improvements that have occurred since completion of the study.

The inventory serves as the foundation for completing subsequent portions of the Limited Master Plan Update, including the validation and update of the 1994 Master Plan aviation demand forecasts and facility requirements. This chapter contains a summary of recent airport development, a description of the existing airport conditions (size, type, location, and condition of all major facilities), a discussion of the surrounding airspace, and presentation of pertinent socioeconomic characteristics.

Data was collected through various sources including an on-site visit, data received from airport staff, excerpts from the 1994 Airport Master Plan, and review of other pertinent documents and files. Local, state, and national sources were used to provide updated information representing airport conditions through the year 1997, which is the base year for the Limited Master Plan Update.

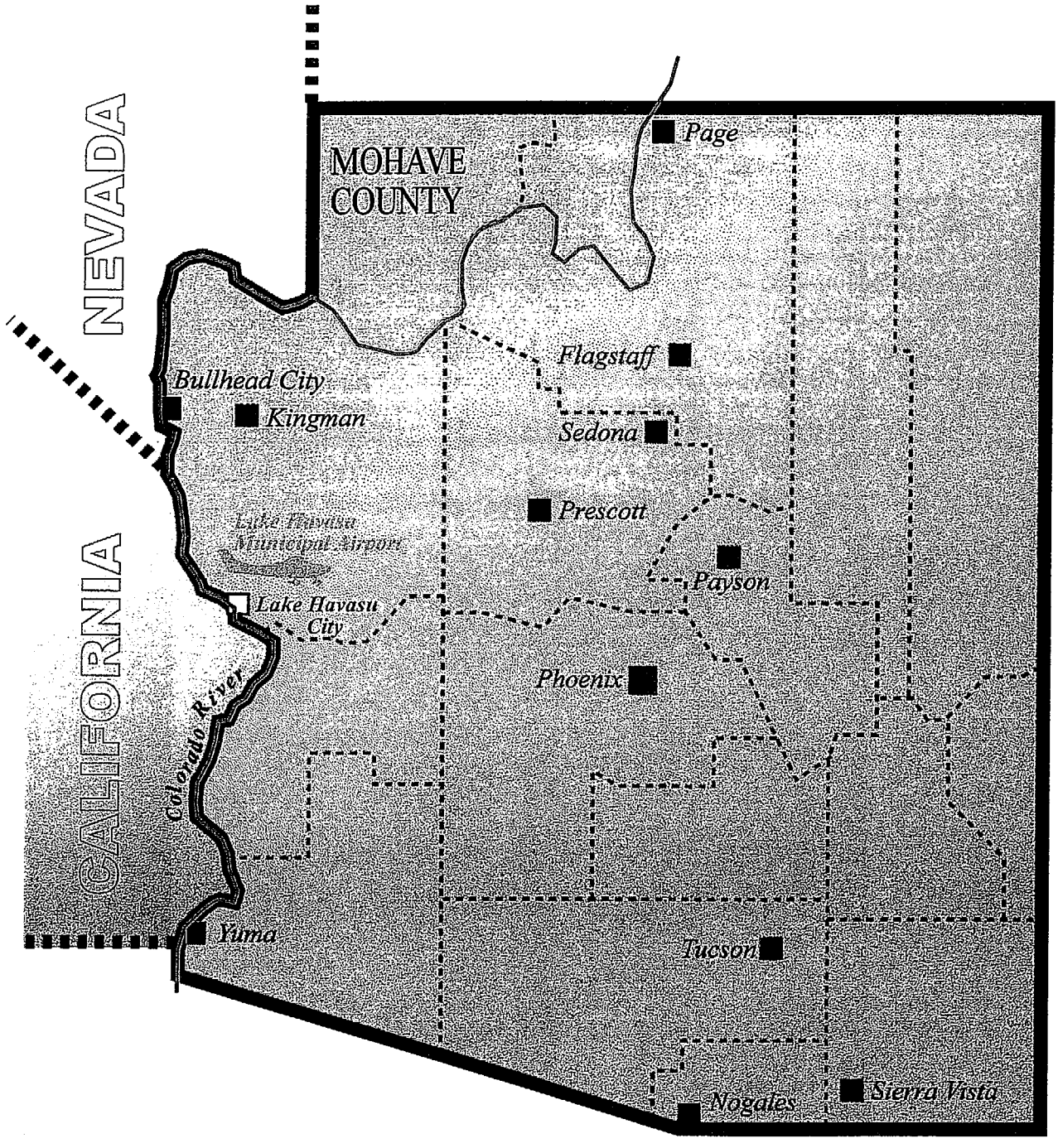
1.2 AIRPORT SETTING

LHC Municipal Airport is located at the Arizona-California border along the Colorado River (Exhibit 1-1). It lies in the southwest corner of Mohave County, four miles north of Lake Havasu City.

The airport covers 620 acres at an elevation of 783 feet mean sea level (MSL). The property is triangular in shape bordered by State Route 95 on the west, the Mohave Mountains on the east, and open terrain, on the south (Exhibit 1-2). Property adjacent to the south end of the airport is private, state land, and City-owned.

1.3 AIRPORT DEVELOPMENT HISTORY

LHC Municipal Airport opened in 1991. The land was purchased from the Bureau of Land Management (BLM) in 1989 and construction of airport facilities was completed in June of 1991. Initial development at the airport included a 5,500-foot runway, taxiway system, aircraft apron area, terminal building, non-directional beacon (NDB), Automated Weather Observation System-III (AWOS-III), and an underground fuel storage facility. Shortly after the airport opened, a new auxiliary windsock was installed. A summary of airport development projects since the 1994 Master Plan is presented in Table 1-1.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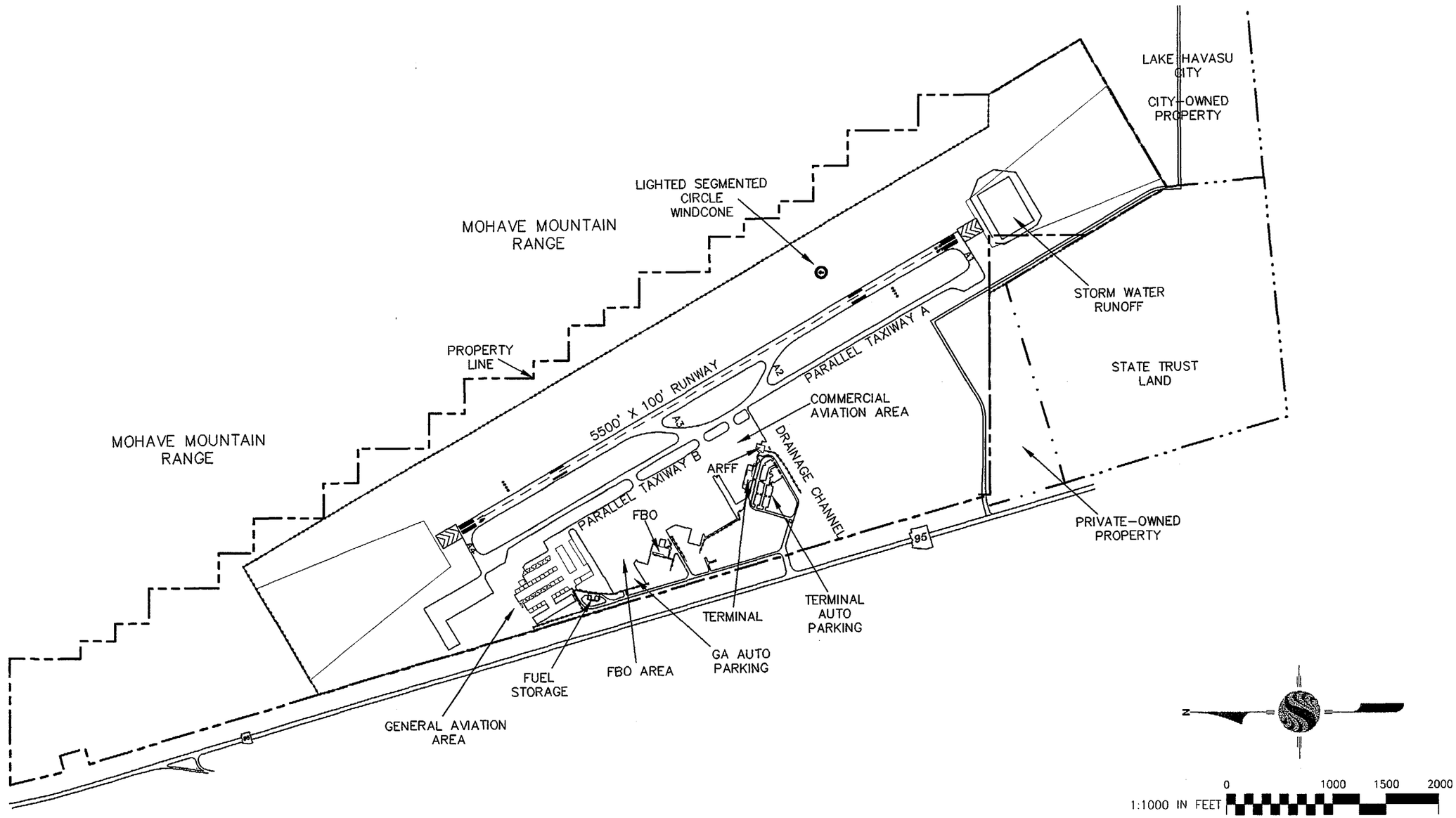
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STORM WATER RUNOFF
PROPERTY LINE
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STATE TRUST LAND
COMMERCIAL AVIATION AREA
MOHAVE MOUNTAIN RANGE
ARFF
DRAINAGE CHANNEL
PARALLEL TAXIWAY B
FBO
95
PRIVATE-OWNED PROPERTY
TERMINAL AUTO PARKING
TERMINAL
GA AUTO PARKING
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GENERAL AVIATION AREA
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Table 1-1
Airport Development since the 1994 Airport Master Plan

Year	Project Description
1994	New runway distance markers.
1995	New tie-down apron and connecting taxiway, north end of Taxiway A. (49 spaces, approx.17,417 SY).
1995	New tie-down apron (25 spaces, approximately 4,870 SY).
1996	New taxilane, south of hangar area (approx. 47,417 SF).
1996	New taxilane, west of hangar area (approx. 35,550 SF).
1996	New emergency generator.
1996	New City-owned hangars (20).
1997	New Taxiway B signage.
1997	Apron pavement preservation.
1998	New automated gates (2).
1998	New restrooms.
1998	Second Auxiliary Wind Sock

Source: Airport Manager, September 1998

1.4 EXISTING AIRPORT FACILITIES

Airport facilities are grouped into airside and landside facilities. Airside facilities refer to the airfield, while landside facilities cover from the airport entrance boundary to where the airfield begins. Exhibit 1-2 illustrates the layout of the existing airport facilities, which includes development that has occurred at the airport since the 1994 Master Plan.

1.4.1 Airside

Runway

LHC Municipal Airport has one runway, designated as Runway 14-32, with dimensions of 5,500 feet by 100 feet. The runway has a load bearing capacity of 30,000 pounds single wheel loading (SWL). The runway pavement is asphalt and in good condition. There have not been any changes to the runway since the 1994 Master Plan.

Taxiways

The taxiway system facilitates aviation traffic between the runway and aircraft parking areas. The LHC Municipal Airport has two parallel taxiways, two acute angle exit taxiways (angled to meet grade requirements), and connecting taxiways.

Taxiway A is a full-length parallel taxiway on the west side of the runway. It is 50-feet wide and separation between its centerline and runway centerline is 340 feet. An aircraft holding pad is located at each end of the taxiway. Runway 14-32 and Taxiway A are connected by taxiways at each end and two acute angle exit taxiways located near mid-runway. The connecting taxiways, including the acute angle exit taxiways, are 75 feet wide.

Taxiway B runs parallel to Taxiway A along the edge of the aircraft apron area. Separation between Taxiway A and B is 160 feet and Taxiway B1, B2, and B3 connect the two taxiways. Both Taxiway B1 and B3 are 75 feet wide. Taxiway B2 is 50 feet wide (Exhibit 1-2).

1.4.2 Navigational Aids (navaids)

Enroute Navigational Aids

The two primary enroute navigational aids for LHC Municipal Airport include the Needles VOR, 13.2 nautical miles northwest of the airport, and the Parker VOR, 32.3 nautical miles southwest of the airport. This has not changed since the 1994 Master Plan.

Terminal Area Navigational and Landing Aids

Terminal area navaids identified in the 1994 Master Plan included the NDB and Needles VOR. The NDB has been deactivated due to four failed FAA flight checks. The Needles VOR still provides a circling approach to LHC Municipal Airport.

1.4.3 Lighting and Marking

Identification Lighting

LHC Municipal Airport has an airport beacon that indicates its location and presence. The rotating green and white lights identify the airport as a lighted land airport. The beacon is located west of the runway and south of the apron area. The airport also has an auxiliary windsock, which is located east of the runway. The illuminated windsock and segmented circle identifies the traffic pattern (left base for Runway 32 and right-base for Runway 14) and indicates wind speed and direction.

Runway and Taxiway Lighting

Runway 14-32 has a medium intensity runway lighting (MIRL) system. The MIRL system outlines the runway with white lights.

Taxiway A and the exit/connecting taxiways are equipped with a medium intensity taxiway lighting (MITL) system which outlines the taxiways with blue lights. There are no lights on Taxiway B.

No changes have been made to these systems since the original airport construction in 1991.

Approach Lighting

Runway 14 and 32 approach ends are each equipped with a four-box precision approach path indicator (PAPI) system and runway end identifier lights (REILs). The PAPIs and REILs are in good condition.

Markings

Runway 14-32 has non-precision approach markings, which consist of designation, centerline, threshold, and aiming point markings. Centerline markings are also included on the taxiways and taxilanes. Airfield markings are in fair condition. Since the 1994 Master Plan, runway distance markers have been added.

1.4.4 Landside Facilities

Terminal Building Area

Lake Havasu City Municipal Airport has a terminal building covering an area of approximately 5,700 square feet. The terminal is located near midfield between State Route 95 and the runway. It is currently occupied by America West Express, Avis Rent-a-Car, Hertz Rent-a-car, and the Airport Administration. The building includes tenant space, a passenger lobby, passenger boarding area, baggage claim area, snack area, restrooms, and storage.

Fixed Base Operators (FBOs)

Sun Western Flyers is the FBO currently providing a variety of pilot and aircraft services at LHC Municipal Airport.

Aircraft Apron and Parking Area

As previously shown in Exhibit 1-2, the airport has a large centralized aircraft parking apron on the west side of the runway. This apron (approximately 96,230 SY) provides a total of 202 physical tie-down spaces for based and transient aircraft, 18 of which are FBO exclusive and 63 for transient use. The remaining tie-down spaces are categorized as permanent tie-down.

Since the 1994 Master Plan, two additional aircraft parking apron areas with associated taxilanes have been constructed. One apron area, located off the north end of Taxiway A, provides 49 tie-down spaces, and the other south of the commercial ramp provides 25 tie-down spaces. With the additional apron areas, the total number of tie-down spaces has gone up to 286. To provide aircraft access for new hangars, a new taxilane was constructed on the south end of the hangar area. Another taxilane was constructed west of the hangar area to provide access for future hangars.

Fueling Facility

Both Jet A and 100 LL fuel is available at LHC Municipal Airport. The 1991 installed fuel tanks are in excellent condition and store 24,000 gallons of 100LL and 12,000 gallons of Jet A. The fuel tanks are owned by Lake Havasu City and operated by the FBO for public fuel sales.

Automobile Parking

Automobile parking, which is controlled by the City, is available adjacent to the terminal and the tie-down apron. Both parking areas are in good condition. The terminal parking area, which is used by the public, terminal area employees, and rental car agencies, has 163 spaces with 45 reserved for rental cars. An additional 65 paved spaces and 50 unpaved spaces are available adjacent to the tie-down apron.

1.4.5 Airport Support Facilities

Aircraft Rescue and Fire Fighting Facilities (ARFF)

LHC Municipal Airport has an Aircraft Rescue and Fire Fighting (ARFF) facility used to house an Air-Evac Medical Unit. It is located south of the terminal building and includes an office area and an equipment storage building. There is only one ARFF vehicle stored in the facility, but it can accommodate additional equipment if necessary.

Airport Access

Airport access is provided by Airport Road, which is a two-lane paved road. It leads to the terminal building, hangar area, and parking lots from State Route 95. State Route 95, a two-lane paved highway, runs along the west side of airport as it connects Lake Havasu City to Interstate 40, which is 19 miles north of the City.

Utilities

The City and Citizens Utility Company provide water and electricity at the airport. Natural gas service is still not available at the airport.

1.5 AIRSPACE AND AIR TRAFFIC CONTROL

Airport operating procedures facilitate air traffic operating between LHC Municipal Airport and adjoining airspace. There is no formal terminal traffic control service available at the airport because it does not have an air traffic control tower. There are, however, published procedures formulated to provide safe flight operations for all its users and compatibility with surrounding communities.

A left-base for Runway 32 and right-base for Runway 14 traffic pattern is utilized to access LHC Municipal Airport under visual meteorological conditions (VMC). General aviation traffic operate in the pattern at an altitude of 1,800 feet mean sea level, while commercial and turbine aircraft are in the pattern at 2,300 feet mean sea level. There is a published instrument approach into LHC Municipal Airport available for when meteorological conditions are below VMC (Exhibit 1-3). The minimums for the approach are 1¼ mile visibility with ceilings greater than 1,000 feet. The procedure is a circling-to-land approach from the northwest onto Runway 14.

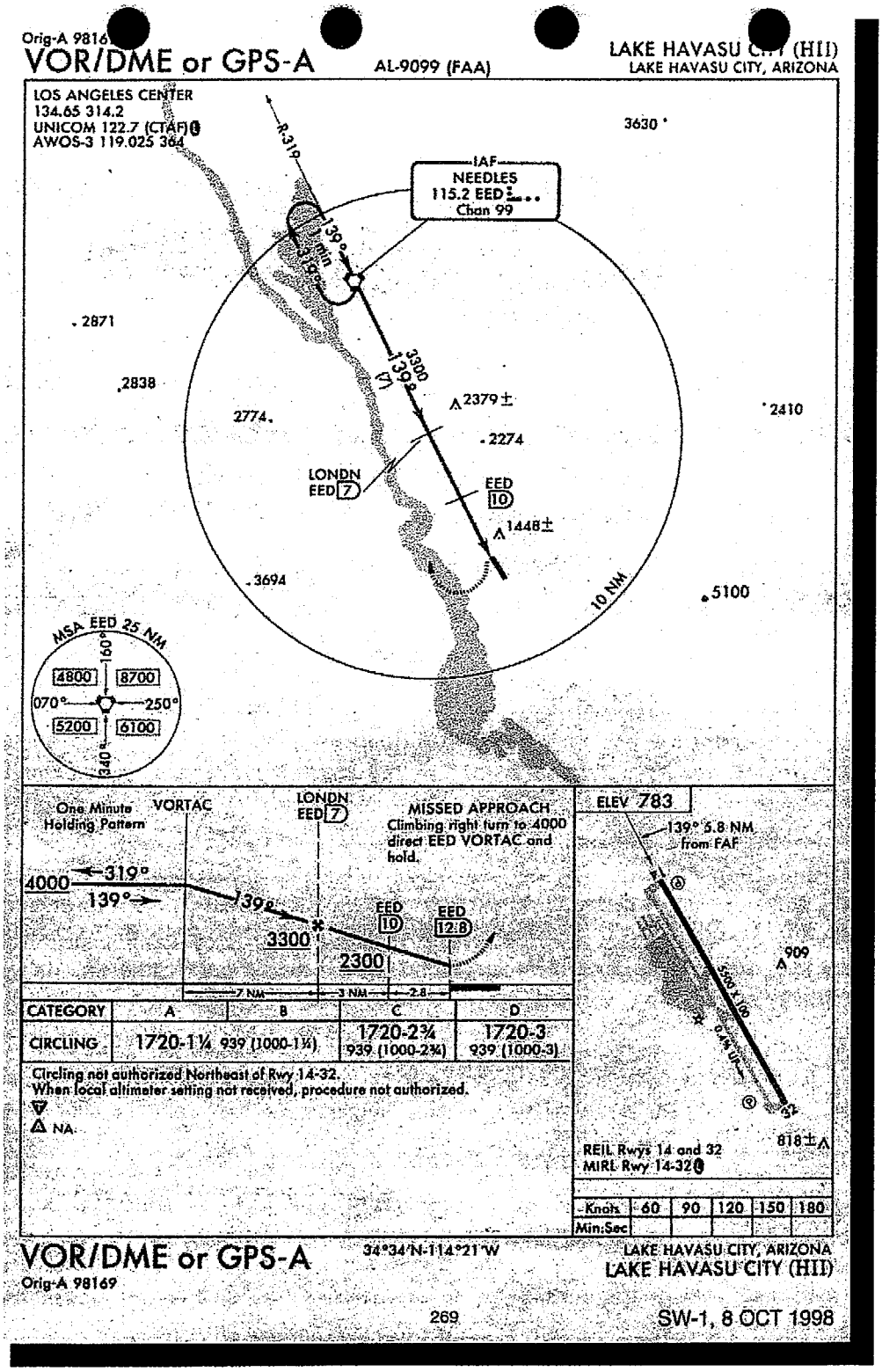
Prohibited procedures include intersection takeoffs, straight-in approaches, straight-out departures, and turn-outs prior to end of runway on departure. Airport users are also advised, for noise abatement purposes, not to over fly the communities of Desert Hills, Havasu Gardens, and Crystal Beach located south to west 1.5 to 2 miles from the airport. Additionally, aircraft operators are requested to maintain at least 2,000 feet above ground level from the highest elevation in the Havasu Lake National Wildlife Refuge.

The airspace beyond LHC Municipal Airport consists of a network of airports, airways, and Military Operating Areas (MOA). Exhibit 1-4, which is an excerpt from the Phoenix Sectional Aeronautical Chart, depicts the area airspace. Enroute air traffic control service is provided by Los Angeles Air Route Traffic Control Center.

1.5.1 Airports

The nearest major airports to LHC Municipal Airport are located in Phoenix, Arizona and Las Vegas, Nevada. The other airports located in the vicinity of LHC Municipal Airport are more compatible in size and activity level.

Since the 1994 Master Plan, Eagle Airpark was activated. Eagle Airpark is a private-owned airport that is open to the public, making five airports available to the public within a 30 nautical mile range of LHC Municipal Airport. Eagle Airpark is approximately 28 nautical miles northwest of LHC Municipal Airport. It has a 4,000-foot runway with its surface comprised of both asphalt and dirt. The north 3,000 feet is asphalt and the south 1,000 feet is dirt. Air traffic averages 141 operations per day.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1720-3 939 (1000-3)
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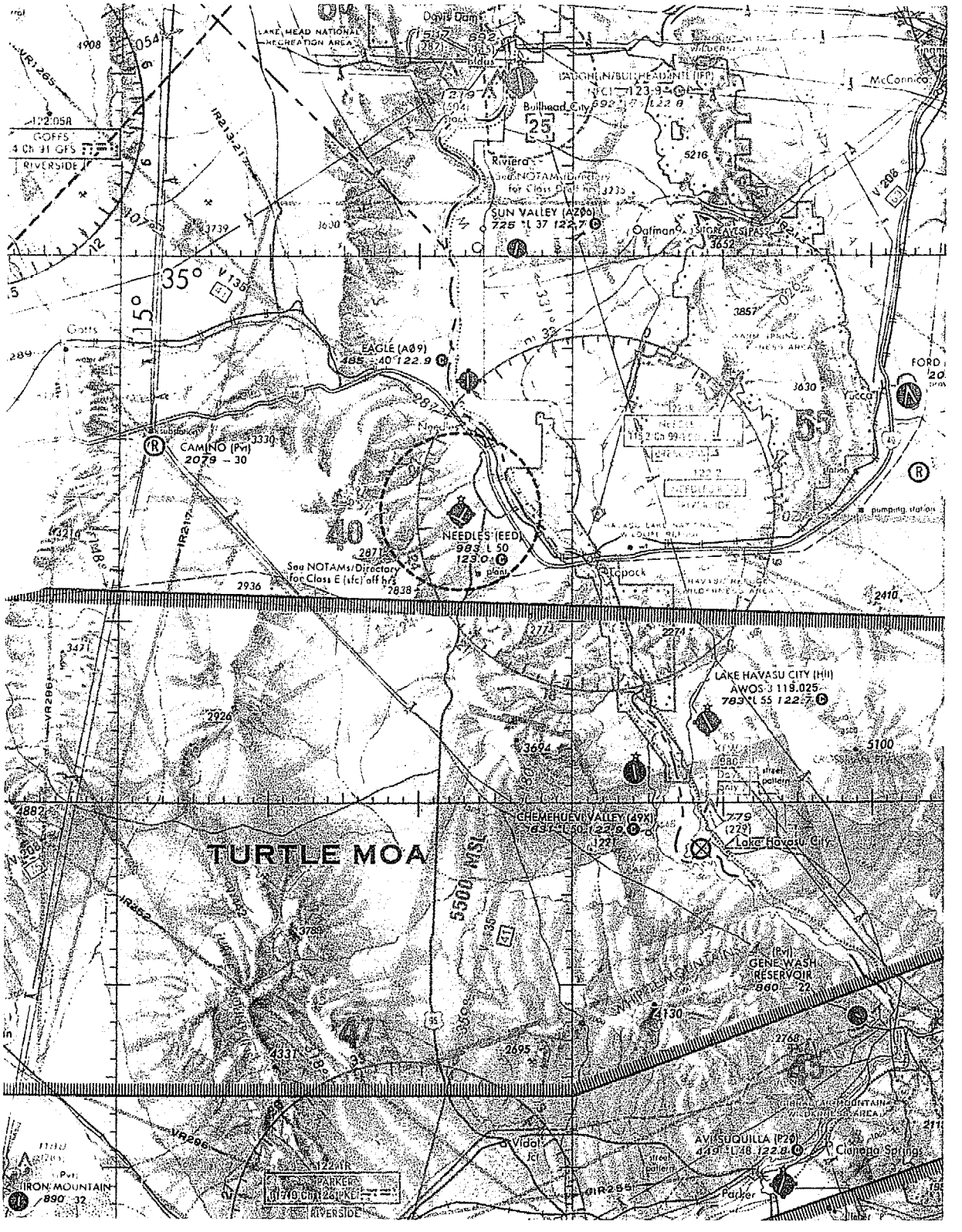
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Vidal Junction Airport, which was listed in the 1994 Master Plan as a private airport, is not depicted on the Phoenix Sectional Aeronautical Chart. It is assumed the unpaved runway surface has become inactive.

1.5.2 Airways

The airway system within the vicinity LHC Municipal continues to facilitate air navigation between airports. There have not been any changes to the airways since the 1994 Master Plan.

1.5.3 Military Operating Areas

Military Operating Areas (MOA) are established airspace with defined dimensional limits and operational restrictions. Their purpose is to separate the military training activity that occurs in the MOA from other aviation traffic.

LHC Municipal Airport lies under the Turtle MOA. It has vertical limits from 11,000 feet mean sea level up to but not including 18,000 feet mean sea level and time restrictions from Monday through Friday. During the other times, it is controlled by Los Angeles Center. The Turtle MOA and other surrounding military operating areas do not significantly effect the air traffic utilizing LHC Municipal Airport.

1.6 SOCIOECONOMIC CHARACTERISTICS

Air activity in LHC Municipal Airport is related to the socioeconomic characteristics of the surrounding communities. Area population and economic base are good indicators of aviation demand and consequently aviation service level requirements.

1.6.1 Population

Lake Havasu City continues to experience growth in population. The increase seems to be occurring even though Arizona and Mohave County are experiencing a disappearance of population growth rate. The population for Lake Havasu City in 1998 was 42,501, a growth rate of 10% from 1997 (Table 1-2). Arizona and Mohave County had a growth rate of 0% for the same year.

Table 1-2
Population Analysis

Year	Lake Havasu City		Mohave County		Arizona	
	Population	Growth*	Population	Growth*	Population	Growth*
1960	N/A	N/A	7,736	N/A	1,321,100	N/A
1970	4,111	N/A	25,857	23.4%	1,795,000	3.6%
1980	15,909	28.7%	55,865	11.6%	2,718,215	5.1%
1990	24,363	5.3%	93,497	6.7%	3,665,228	3.5%
1996	37,580	9.0%	127,700	6.1%	4,462,300	3.3%
1997	38,635	2.8%	133,550	4.6%	4,595,375	3.0%
1998	42,501	10.0%	133,500	0.0%	4,600,275	0.1%

* Growth rate for multiple years represents average annual growth rate.
Source: Arizona Department of Economic Security, February 1997.
Profile: Mohave County, Arizona Department of Commerce, June 1998.
Arizona Air Service Study, 1998.

1.6.2 Economy and Employment

Lake Havasu City is experiencing a positive state of economy. The economic indicators (labor force and growth) are heading in the right direction, and employment is relatively diversified by sectors. As Table 1-3 indicates, the unemployment rate for Lake Havasu City continues to go down while the civilian labor force grows. Economic growth indicators such as taxable sales and secondary assessed valuation are also continuing in an upward trend. Although tourism continues to be the major contributor to the economy of Lake Havasu City, home of the historical London Bridge and miles of waterfront property, other industries such as manufacturing are also finding a place in the community (Table 1-4).

Table 1-3
Economic Indicators

Labor Force Indicator	**1980**	AAGR*	**1990**	AAGR*	**1997**
Civilian Labor Force	7,004	7.89%	12,467	4.75%	16,616
Employed	6,611	7.91%	11,838	5.22%	16,161
Unemployed	393	-	629	-	455
Unemployment Rate	5.6%	-	5.0%	-	2.7%
Growth Indicator	**1990**		**1995**		**1997**
Taxable Sales	$301,052,300	-	$378,469,902	-	$440,705,500
Secondary Assessed Valuation	$155,034,302	-	$286,057,387	-	$284,936,531

* Average Annual Growth Rate
Source: *Lake Havasu City, Arizona Business & Lifestyle Profile,* Lake Havasu City Manager's Office, July 1998.
Community Profile: Lake Havasu City, Arizona Department of Commerce, June 1998.

Table 1-4
Employment by Sector

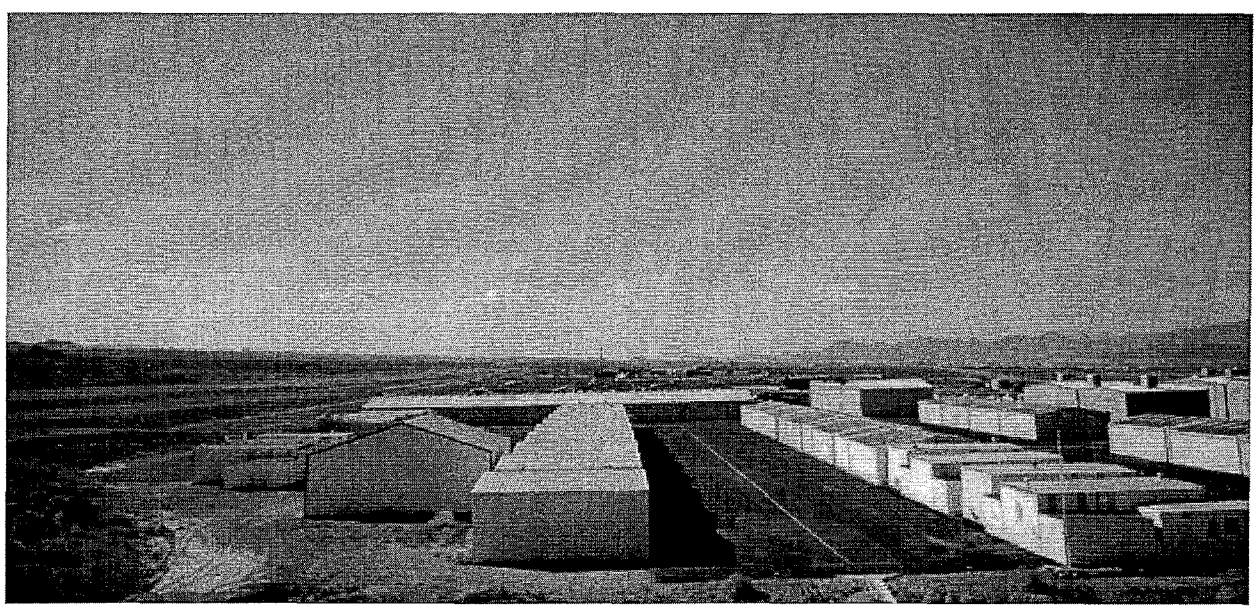
Industry	% of Total
Trade	28.7%
Services	27.0%
Government	17.8%
Construction	8.0%
Manufacturing	7.8%
Transportation, Communication, and Public Utilities	5.2%
Finance, Insurance, and Real Estate	4.9%
Mining	0.6%

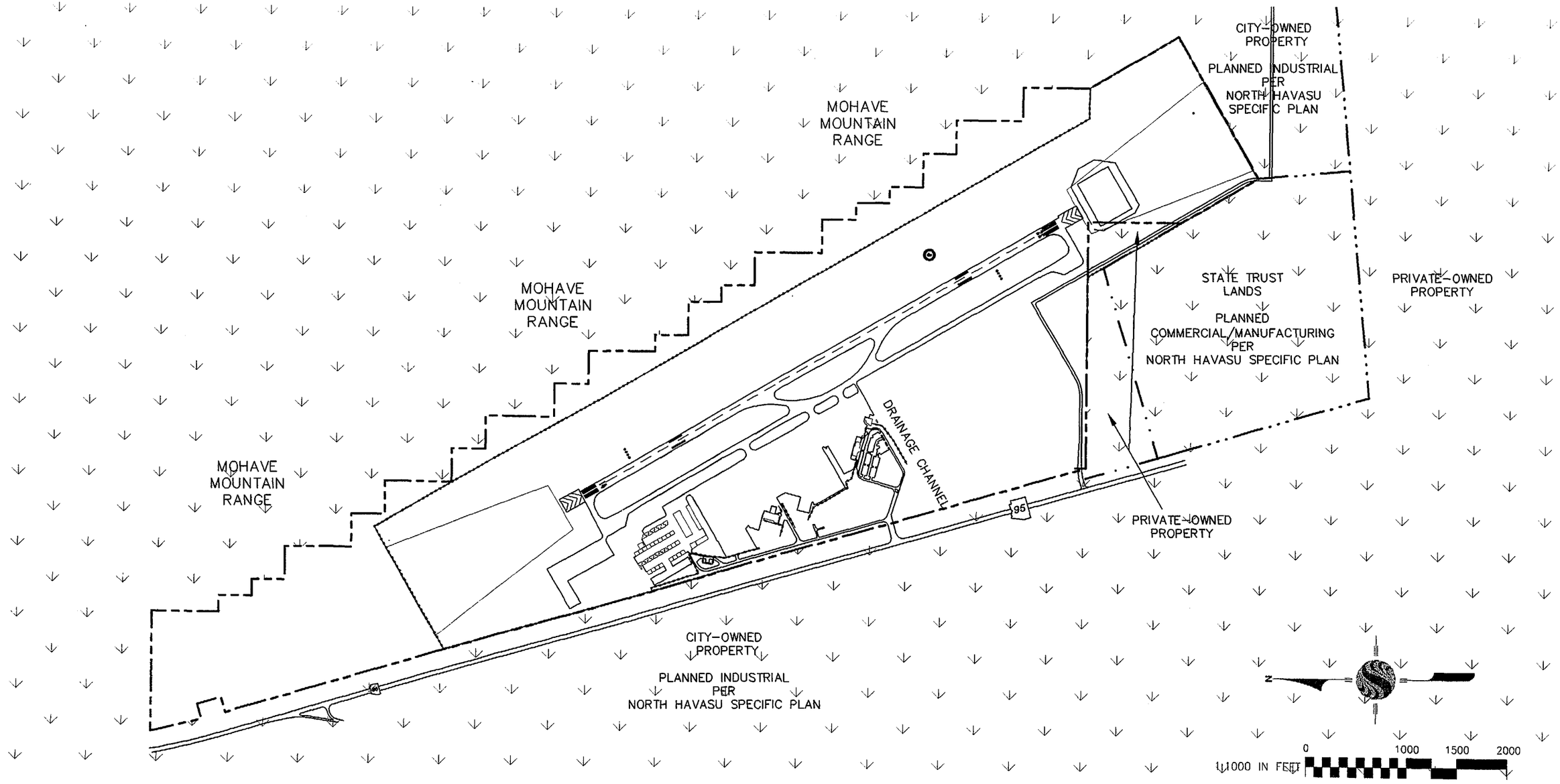
Source: *Lake Havasu City, Arizona Business & Lifestyle Profile,* Lake Havasu City Manager's Office, July 1998.

1.7 EXISTING LAND USE

The City Council for Lake Havasu City adopted in November 1989 the North Havasu Specific Plan, which is the General Plan with supplemental policies and findings. The General Plan designates land uses for industrial, commercial, and open space in the North Havasu Area. Currently, the land in the vicinity of LHC Municipal Airport is mostly vacant and undeveloped. Exhibit 1-5 depicts land designation per the North Havasu Specific Plan, as well as owner.

Since the 1994 Master Plan, a private owner has acquired two parcels of land within close proximity of the airport. As private property, the parcels are not considered congruent with the functions and operations of the airport, and therefore, attempts to acquire should be made by Lake Havasu City.




MOHAVE MOUNTAIN RANGE
MOHAVE MOUNTAIN RANGE
MOHAVE MOUNTAIN RANGE
CITY-OWNED PROPERTY
PLANNED INDUSTRIAL PER NORTH HAVASU SPECIFIC PLAN
STATE TRUST LANDS
PLANNED COMMERCIAL/MANUFACTURING PER NORTH HAVASU SPECIFIC PLAN
PRIVATE-OWNED PROPERTY
DRAINAGE CHANNEL
PRIVATE-OWNED PROPERTY
CITY-OWNED PROPERTY
PLANNED INDUSTRIAL PER NORTH HAVASU SPECIFIC PLAN
95
N
0
1000
1500
2000
1000 IN FEET